

Chapter 5. Refuge Facilities and Public Use Programs

5.1 Refuge Infrastructure and Operational Facilities

There are few facilities at Kakahai‘a NWR due to the limited space available and the need to only secure equipment and supplies at this unstaffed Refuge. The Refuge is provided with electrical service from Maui Electric Company, Inc. Water and septic services are not available.

5.1.1 Refuge Operations

The administrative functions and staff for Kakahai‘a NWR are located at the Maui NWR Complex office located at Kealia Pond NWR on the island of Maui. All staff have dual responsibilities for the oversight of both Refuges. Trips to Kakahai‘a NWR are regularly scheduled for every other week and is typically made by the maintenance worker to inspect the Refuge condition and perform maintenance and habitat improvement tasks. Periodically, volunteers or other Refuge staff is sent to assist with projects. The maintenance worker makes 26 trips per year on average; however, overnight trips are made to complete priority and time-sensitive projects (fence repairs, road work).

5.1.2 Maintenance Facilities

The primary maintenance facilities include a metal container and shed to secure equipment and supplies. This minimal storage is sufficient given the amount of non-wetland area available and the unstaffed Refuge status.



Kakahai‘a storage units USFWS

5.1.3 Dempster Windmill

The metal Dempster windmill located between Old and New Ponds was erected when Moloka‘i Ranch was using the wetland for rice production from the late 1800s-1950. When the Refuge was acquired by the Service, the windmill was being used for fish production by the Yuen family. After acquisition, the windmill pump was used to deliver water from Old Pond to New Pond and was still in operation in 1988. At that time, Refuge staff reported considerable savings in electric pumping cost; however, the seasons when winds along the Moloka‘i shoreline were fairly constant (10-15 mph spring-summer) were not when water was needed most (fall).

Today, the windmill frame is still in place but the blades have long been removed because of disrepair. This structure has become a local landmark and a signature feature of the Refuge. Moloka‘i residents have requested the Service retain and repair the windmill even if it no longer operates as source of electricity.

5.1.4 Roads

The Refuge has one access road located off Kamehameha V Highway approximately 5.4 miles from the main town of Kaunakakai. The entrance road also serves as a right-of-way for five (5) residents north of the boundary. Through the years, the original dirt road had become eroded and susceptible to flooding from upper watershed draining and Kawela Stream overflow. From 2000-2009, flooding of the road increased dramatically and prompted efforts to secure funding, reconfigure and repair the road, and evaluate the flooding issue. In June 2010, the road was elevated and paved to allow safe, reliable access for staff and the adjacent neighbors. A slight modification to the road alignment allows for minimal parking for future wildlife observation from outside the fence.

5.1.5. Constructed Ponds and Levees

Old Pond covers about 15 acres. The levees around the perimeter are currently eroded and impacted by invasive woody and annual plants making it impenetrable for access by foot. When this levee is reconstructed it will provide access for staff, visitors, and Refuge vehicles. In 1984, radial levees were constructed inside the pond; these levees will be removed to allow natural flooding and eliminate the high elevation inside the pond where invasive plant growth is an existing problem.

The 5.5-acre New Pond was constructed in 1984 for shallow water habitat; however, the lack of water has greatly decreased its value to endangered waterbirds. The inner pond and perimeter levees are currently covered with pest plants, a majority of which is woody vegetation that impairs the integrity of the pond. The levees around this pond were accessible in the past and will continue to be used for EE and interpretation when restored. This pond is visible from the Refuge entrance road and would be a key area for wildlife observation and photography in the future.

5.1.6 Wells, Pumps, Water Distribution Lines, and Water Control Structures

In 1984 (when New Pond was constructed), a water control structure was installed to connect both ponds and a pump located at the windmill was used to pump water from Old Pond into New Pond. This pump was in use until 2003; however, it is no longer functional because there is not enough water on the west side of Old Pond to pump into New Pond. At one time, the wind-driven pump was operational at all times of the year. Once the wetlands are restored, the Refuge would replace the pump to take advantage of the natural flooding from groundwater springs in Old Pond. Previous owners of the property had drilled modest wells, one of which has a coral lining above ground that is still visible. The Refuge will evaluate the feasibility of using these borings to install a casing and outfit it with a pump before drilling a new well. A new water supply is needed for New Pond to create and maintain shallow water habitat for endangered ae'o and to help control pest plants.

Old Pond has an old water control structure with a connection to the makai side via a culvert under Kamehameha V Highway. This structure is degraded and is intended to be removed and closed because the culvert is lower than the shoreline and covered with sand, preventing natural flow of water to the ocean. Both Old and New Ponds should have separate water control structures located at the lower elevation of each pond and connected to a ditch running along the south side of New Pond. This ditch intersects with the drainage ditch and culvert under the highway and exiting to the ocean.

Currently, there are no water distribution lines dedicated to habitat management. The Refuge has initiated preliminary investigation into the re-establishment of an existing well or construction of a new well to provide an alternative water source for New Pond. The pump outfitted on this well would have water distribution lines, primarily to feed into New Pond but a valve to Old Pond would also be constructed to provide alternative flooding capabilities.

5.1.7. Kamehameha V Highway Culvert

A concrete culvert under Kamehameha V Highway is located on the east side of the entrance road and provided drainage to the ocean. At the time of construction, the culvert may have been appropriate for drainage and situated at an elevation that allowed unimpeded flow to the ocean; however, that is no longer the case. The existing elevation of the culvert is below the mean tide resulting in sand buildup in front of the opening and prevention of appropriate drainage. This condition is similar to other culverts along the southeastern shore of Moloka‘i causing occasional flooding of the highway and private property. During and after winter rains, HDOT uses heavy equipment to remove sand from culvert openings and plows sediment runoff from the highway. Unfortunately, once most water is drained, the culvert openings become plugged with sand with the next high tides.

The flooding along the highway and entrance road at Kakahai‘a NWR has been an issue not only because of the culvert but also due to drainage problems at Kawela Bridge, approximately 0.3 miles west of the entrance road. Debris and sediment blocking water flow under the bridge results in overflow along the highway that eventually reaches the Refuge entrance road, adding water to an already flooded area. Although, the culverts are the responsibility of the State, the flooding is a Refuge issue that not only impacts staff access onto the Refuge but also impacts the five property owners who have a right of access along the Refuge road to their property.

In 2004, the Service collaborated with the Federal Highway Administration to address flooding at the culvert with the intention of developing a design to resolve the sand blockage problem. The options were limited due to feasibility, collaboration with other agencies, and the potential impacts to areas further down the shoreline. The flooding issue is prevalent along the entire southeastern shoreline of Moloka‘i and is an issue that the Refuge will continue to investigate to develop solutions that are agreeable with all agencies and adjacent landowners.

5.1.8 Fences and Gates

There are two fences at Kakahai‘a NWR. One fence encompasses both Old and New Ponds, coastal forest habitat, open grassland areas, and the maintenance area. Although in fairly good condition along the highway, along the eastern boundary it is susceptible to sediment buildup from runoff and erosion. It is also heavily impacted by axis deer and it requires periodic repairs. The portion of this fence that is parallel with the entrance road was replaced in 2010-11 when the Refuge entrance road



Damaged fence along the northern boundary USFWS

was paved. The north side of the fence, along its entire length, is in need of replacement.

A second fence used to be on the west and north sides of the Refuge road and provided a physical boundary with the neighboring private lands. Through the years, portions of this fence were removed due to disrepair and lack of funds to replace. Only small sections are remaining. The Refuge intends to replace this fence in its entirety throughout the length of the entrance road.

5.2 Public Use

5.2.1 Special Use Permits

The wetland areas of the Refuge are closed to the general public. Specific proposed public activities on the Refuge are evaluated to ensure they are compatible with the Refuge's purposes and permitted on a case-by-case basis. Special Use Permits for EE and interpretation are provided to qualified organizations.

5.2.2 Kakahai‘a Park

Kakahai‘a Park, a day-use picnic area, was developed in 1978 makai of the highway bisecting the Refuge and continues to be maintained by the County of Maui. Concrete tables and metal barbeque grills are used on a limited basis by local residents and tourists. As the Refuge is currently unstaffed, we only have anecdotal information on the uses going on in the park. Park use will be evaluated as part of a step-down VSP (to include a new CD if needed).



County park sign USFWS



Picnic area and shoreline USFWS

5.2.3 Wildlife Observation and Photography

From 1976-2003, when the wetlands were habitable for endangered and migratory waterbirds, wildlife observation and photography opportunities were also available. Prior to the encroachment of California bulrush in Old Pond, the number and diversity of endangered and migratory waterbirds made for quality viewing experiences and is still remembered by the older generation of Moloka‘i residents. The Complex office receives an average of 30 e-mails and telephone inquiries each year for access to view wildlife and for classroom visits. The quality of wildlife observation has declined

significantly with the loss of water and open habitat leading to absence of waterbirds, except for the 2-4 days after a rainstorm.

When wetlands are restored and the endangered and migratory birds are once again using the Refuge for foraging, nesting, and resting, there will be an increased opportunities for wildlife observation and photography. A component of the VSP will include plans for an elevated area and kiosk along the entrance road that would provide viewing when the Refuge is closed and when staff is not present.

5.2.4 Environmental Education

In past years, the Refuge hosted EE groups, primarily from the local community and schools, as a supplement to the teacher/leader’s in-class curriculum. The hands-on experiences were valuable for students with such limited access to wetland areas. Nēnē O Moloka‘i is a non-profit corporation created to establish and preserve wild nēnē on the island of Moloka‘i, while emphasizing education through community involvement. They currently have a SUP to access the Refuge and host school and other EE groups. The organization provides educational and volunteer opportunities to groups that include a well-rounded overview of the different types of wetland habitats on Moloka‘i with emphasis on the endangered waterbirds.

Refuge-specific EE programs will be developed for local school groups of varying age levels as part of the VSP. Volunteers would be recruited and trained to assist with the program. All EE programs will have a stewardship component where students would participate in a wetland restoration project.

5.2.5 Volunteers

After the Refuge was established in 1976, residents on Moloka‘i formed the group Kokua Kakahai‘a to provide support for the Refuge and help define and develop goals for wetland restoration, bringing back the diversity of waterbirds at the Refuge, and develop a conceptual design that would include restoration by staff and community involvement. From 1998-2009, annual Kokua Kakahai‘a luncheons at the Moloka‘i Historical Museum were coordinated and funded by group leader Kenneth Fiske. These meetings were an opportunity for the Refuge Project Leader and group to gather and discuss Refuge issues and updates.

